Roling Plains Quail Research Ranch

3rd Annual Field Day

Abstracts

October 1, 2010

RPQRR's Vision: To sustain Texas' quail hunting heritage for this, and future, generations.

Mission statement: To provide land managers, and other stakeholders, with timely, relevant technology and management schemes for enhancing quail populations in the Rolling Plains of Texas.

ROLLING PLAINS QUAIL RESEARCH RANCH
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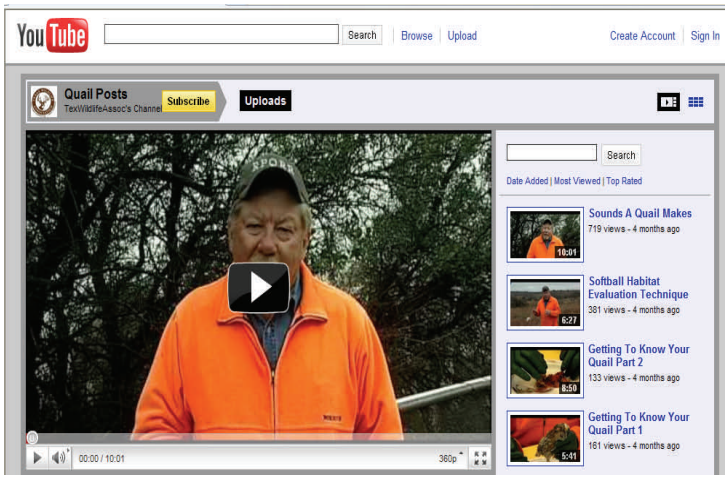

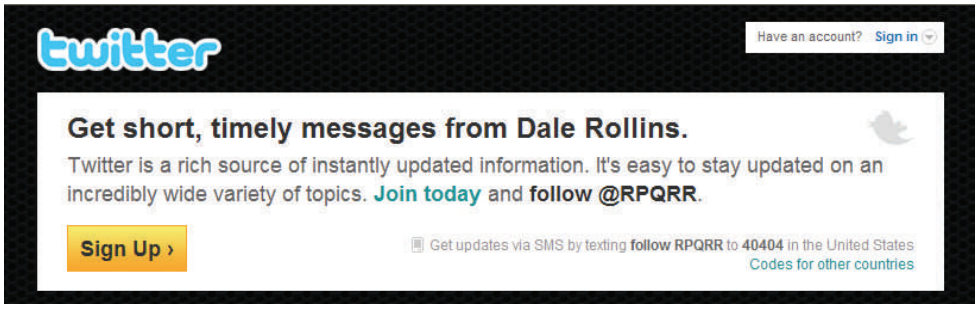

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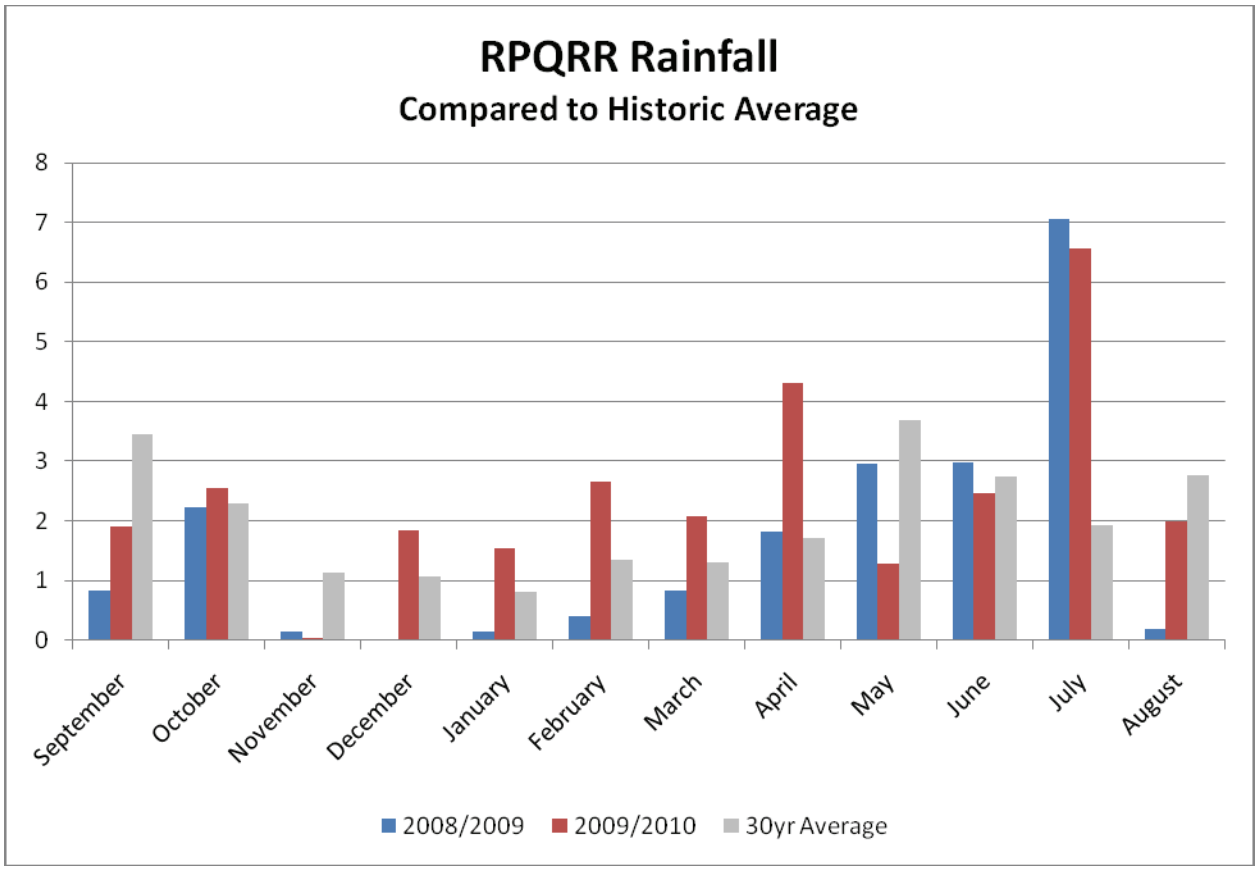
Precipitation records for RPQRR, 2008-2010

Lloyd LaCoste, RPQRR

Rainfall accounts for a large portion of quail production. The 30-year rainfall average for Roby Texas is 24.2 inches. From September 2008 to August 2009 we received below average precipitation (19.6 inches). Quail numbers for the region were the lowest since 1978 when Texas Parks and Wildlife started conducting roadside counts. From September 2009 to August 2010 we received above average precipitation (29.2 inches) which is 5.2 inches above the 30-year average.



STOP 1

STOP #1: As we approach, notice signs with letters to indicate past burn treatments; observe density of prickly pear and abundance of Tx wintergrass, silver bluestem, and forbs:

"A" – Burned March '08 (no herbicide)
"B" – Check (not burned, no herbicide)
"C" – Glyphosate applied @ 2qts/ac in July '09; burned 5 Aug '09

Prescribed burning efforts at RPQRR

Lloyd LaCoste and Dave Barre, RPQRR

Prescribed burning is an important tool used to manage quail habitat at RPQRR. It can be used to reduce prickly pear, reduce volatile fuel loads, and alter quail habitat by retardinng plant succession, increasing forbs, and increasing bare ground. We have conducted a total of 62 burns at RPQRR since Mar 2008. There were 6 prescribed burns conducted in 2008; 31 prescribed burns in 2009; and 25 so far in 2010. Even though we have conducted fewer burns in 2010 we have burned 3 times the amount of area as in 2009. A total of 2,048 acres have been burned with 2,001 acres conducted during cool-season months (Nov-Mar), with only 47 acres (in 16 different burns) conducted during warm-season months (Jun-Aug). Across 3 years we have only had "escapes" on three occasions which burned less than two acres combined. We have demonstrated that both warm- and cool-season fires can be conducted safely and efficiently. We have hosted a Burn School for Certified Prescribed Burn Managers and welcome prospective burners who need additional burn-days to acquire their certification. The RPQRR also hosted a "Fire Appreciation Day" in April 2010 which was well attended.

Funding provided by RPQRR

Pasture	No. Burns	Cool season	Warm season
Ellie	8	8	0
Suzie	9	9	0
Annie	10	8	2
Tex	2	2	0
Deuce	8	6	2
Doc	14	6	8
Chittam	1	1	0
Babe	1	1	0
Lucy	1	1	0
Oscar	1	1	0
James	1	1	0
Meg	5	1	4
TT	1	1	0
Total	62	46	16

Prickly pear reduction following warm- vs. cool-season burns

Dave Barre, RPQRR

From measurements collected thus far in burn plots across the ranch, there is a pattern in the response of prickly pear following warm- vs.cool-seasonal burns. It is apparent that prickly pear responses differ relative to the season of burn. Pad numbers will be reduced initially by about 90% following a warm-season burn and about 60% after a cool-season burn. From observations it seems prickly pear will re-grow vegetatively in greater numbers in the cool-season burns than in the warm-season burns; the extent of which is yet to be determined. In four plots measured so far, pad kill following cool season burns has decreased from 60% (initially) to around 15% after one year, suggesting that pear re-growth occurs quite rapidly in cool-season burns. Prickly pear re-growth of this magnitude is not apparent in the warm-season burn plots.

Funding provided by RPQRR.

Reduction in pricklypear density following burn

Polygon	Season	% reduction	Pre-treatment
ANN-35	Summer	88%	
ANN-36	Winter	65%	
ANN-38	Winter	65%	
ANN-39	Summer	80%	
DEU-6	Summer	95%	Glyphosate
DEU-7	Winter	62%	
DOC-13	Winter	66%	
DOC-20	Summer	82%	

Season Averages

Winter 65%
Summer 86%

Note: Prickly pear density measured using line intercept and quadrat methods to determine pads/m^2

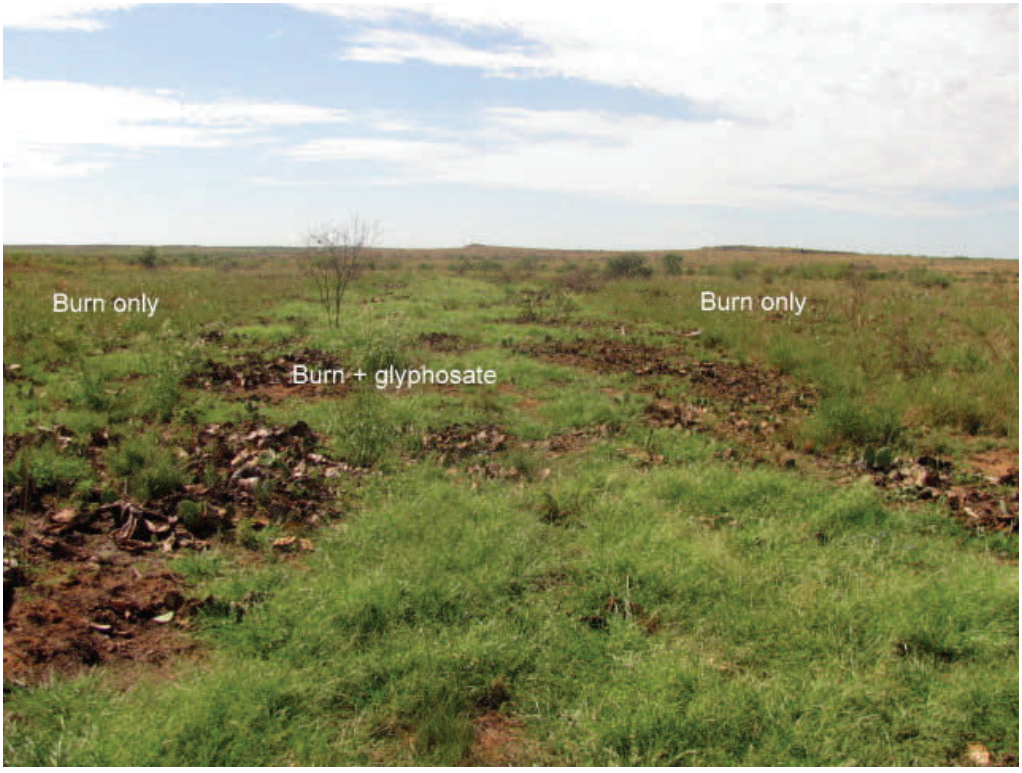
Glyphosate-pretreatment + Summer Burning on RPQRR

Dale Rollins, RPQRR

Texas wintergrass (Nasella leucotricha) and prickly pear (Opuntia spp.) are co-dominants over much of the RPQRR, especially on Abilene and Wehmouth clay loam soils. ON such sites the wintergrass precludes forb growth and the dense cactus limits "huntability." In July 2009, we treated several small plots with either 2 or 4 qts/ac of glyphosate in order to "brown out" some plots to be used in a prescribed burn workshop scheduled for early August. The plots were later burned on 5 Aug with an air temperature of 98 degrees F, a 5 to 8 mph wind out of the south, and RHs ranging from 25 to 35%. Since these initial efforts, we've experimented with additional trials this summer; to date we have been impressed in that these areas have:

Provided a "safe" burning protocol for summer burns;
Proven to be an effective way to construct "chemical firebreaks" ("green walls");
Reduced cacti by >80% at 1-yr post-burn;
Apparently reduced Texas wintergrass (amount yet to be determined);
Increased filaree abundance 14-fold relative to adjacent non-burned checks;
Increased broomweed canopy 15 mos post-burn.

We realize these successional trends would not appease all stakeholders, but the forb flush is intriguing; we will continue to monitor succession over time. The ease at which such treated strips can be burned during August has also been intriguing; we will continue to test this treatment as a fireline. Costs for the lower rate of glyphosate (which has proved to be effective for our needs) is about $50/mile of fireline applied (about $14/ac).



STOP 2

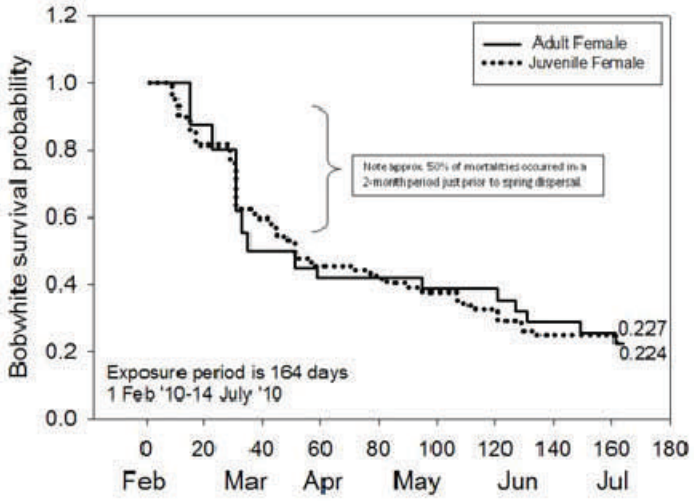
STOP #2: As we approach, notice “Currie quail feeder” on west side of road at intersection. These feeders were part of a supplemental feeding study.

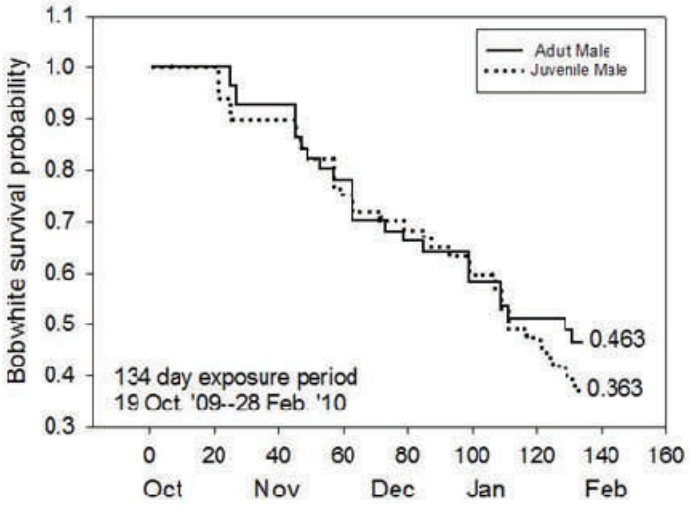
Survival of radiomarked bobwhites at RPQRR

Seth Claybaker and Dean Ransom, Jr., RPQRR

We use radio-marked bobwhites for several aspects of our research. These objective include (a) monitor survival rates, (b) determine cause-specific mortality, (c) document movements and spatial use of habitats, and (d) nesting ecology. We trap males during our fall-trapping effort (Oct-Nov) to monitor survival during fall-winter, and females during our winter-spring (Feb-Mar) trapping effort. In the fall trapping season we radio-marked 112 males (46 adults, 54 juveniles) and tracked them through the winter. We currently have 4 males alive that were collared during the fall trapping season. A total of 90 females (21 adults, 56 juveniles) were radio-marked during our spring trapping session. We currently have 13 females alive and accounted for. On a weekly basis these birds are walked up and flushed if not found on a nest. We count the number of birds in each covey, mark the location of the covey, once nests are found, we mark the nest location, number of eggs if the female is not sitting on the nest or once hatched, and once the nest hatches the number of chicks in the brood. If the nest is destroyed we determine what destroyed the nest based on eggshell evidence.

Funding provided by RPQRR.



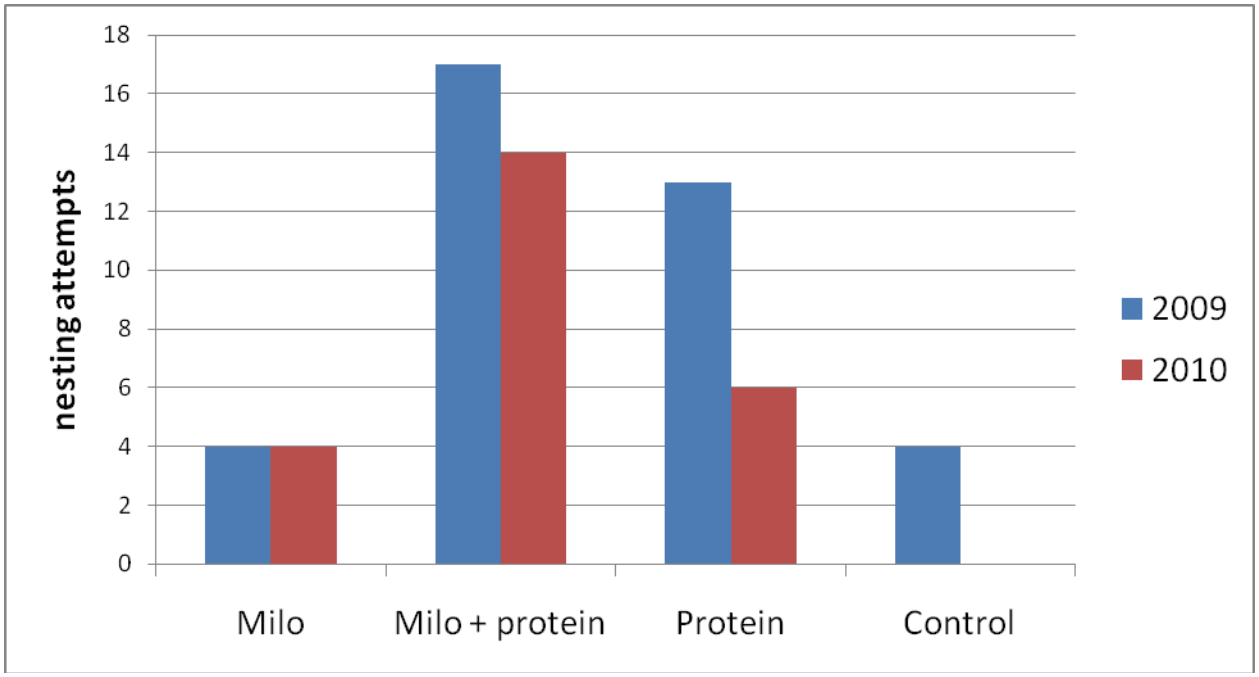


Supplemental Feeding to Boost Nesting Effort Following a Dry Fall – Winter

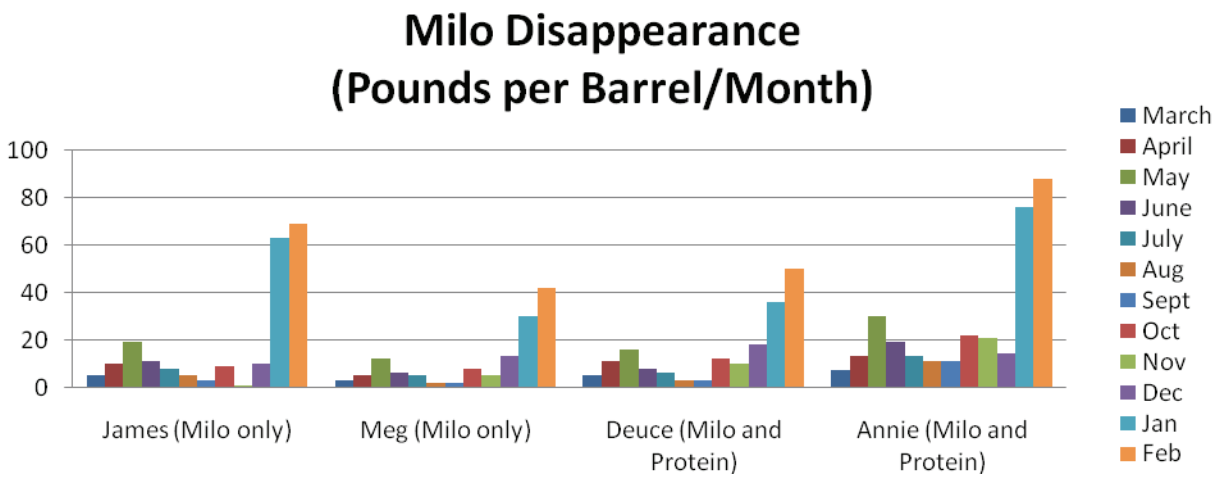
Lloyd LaCoste and Barrett Koennecke, RPQRR

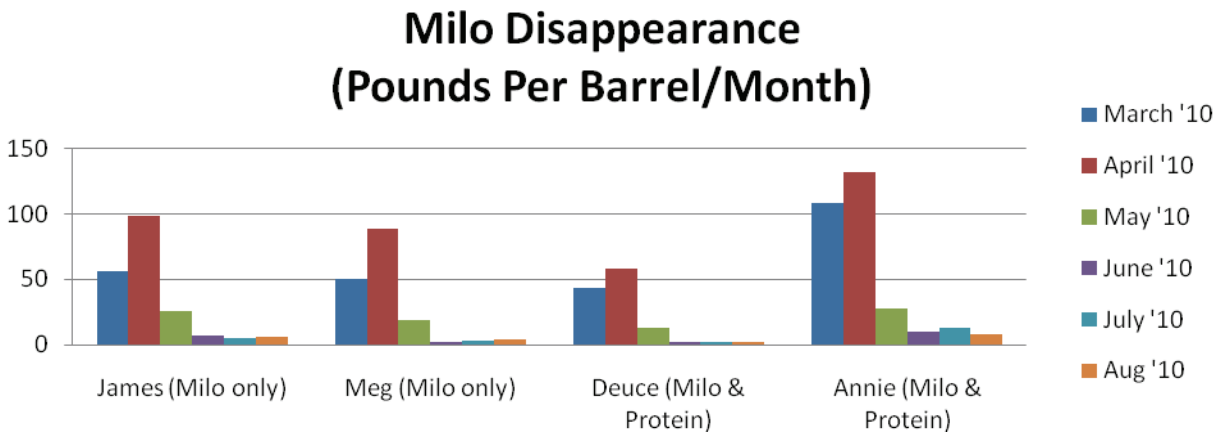
Many factors influence quail populations. One factor is the percent of hens attempting to nest. At RPQRR we wanted to determine if we could increase the number of hens attempting to nest by offering supplemental feed following an extremely dry fall, winter, and spring (2008-09). In March of 2009, we started offering free choice milo in feeders as well as a 24% crude protein layer ration in a pelleted form fed on the ground. The Ranch was divided into 4 treatment areas: 2 pastures received protein only (3 times/week); 2 pastures received milo only ad libitum; two pastures received both protein and milo; and the remaining 2 pastures served as controls receiving no supplemental feed. During March 2009 we trapped and radiotagged 20 hens per treatment area, then monitored nesting attempts using radio telemetry. The pastures that received both milo and protein had 17 attempted nests; the pastures that received protein only had 13 attempted nests, while the pastures that received milo only had 4 attempted nests each. The non-fed pastures that had no supplemental feeding had 4 attempted nests collectively. Perhaps it's only coincidence, but the largest nest we've documented in 3 years (20 eggs) was found in one of the pastures supplemented with both milo and protein. The Pastures continued to be fed until March 2010, and we monitored nesting activity for the 2010 breeding season. The pastures that received both milo and protein continued to produce the most nesting attempts with 14 attempts. The pastures receiving protein only produced 6 nest attempts, and the pastures receiving milo only had 4 attempts. The control pastures had no nesting attempts. Survival of radiomarked females tended also to be greater in fed pastures, but sample sizes are too low to quantify any possible relationship at this time.

Funding provided by RPQRR; protein feed donated by Lyssy & Eckel Feeds, Poth, TX.



As part of this feed study milo disappearance was recorded monthly. The chart below shows disappearance per month. The months with the most disappearance were January through April and, the months with the least disappearance were June through August.





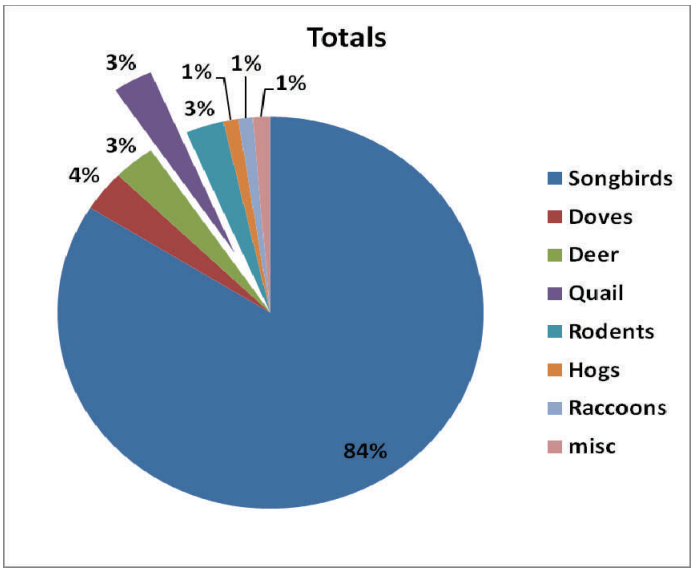
Species visitation of quail feeders at RPQRR

Cathy LaCoste and Lloyd LaCoste, RPQRR

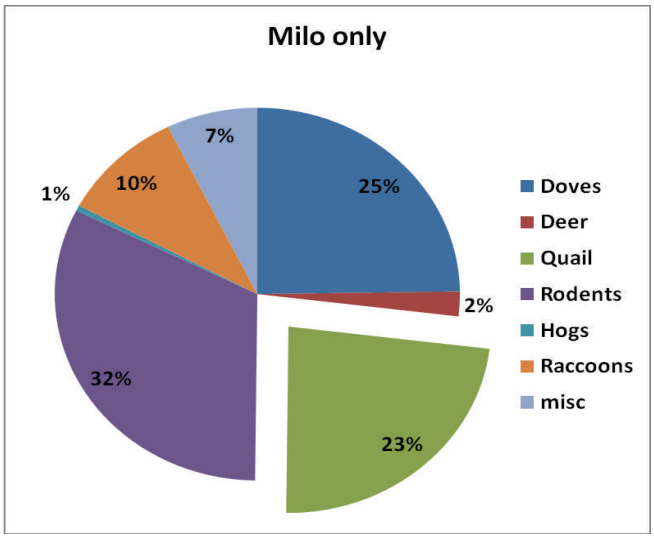
We initiated a study in 2008 to evaluate the efficacy of supplemental feed to increase survival and nesting output by bobwhites during a La Nina dominated (dry winter, spring) weather pattern. As a part of that study, we wanted to determine what species were frequenting feed sites. Game cameras were utilized at each of our supplemental feed sites to monitor species visitation. The cameras were set with a 10-minute delay between photographs. There were a total of 20 different species photographed. Songbirds were the most often photographed species (occurring in 70-90% of the photographs), followed by mourning doves, and white-tailed deer. Quail were the fourth most frequent species and generally accounted for about 2 to 6% of the visitors. Species visitation rates do not necessarily equate to feed consumption by species; deer and raccoons were likely major feed consumers.

Funding provided by RPQRR; protein feed donated by Lyssey & Echols Feeds, Poth, Tx.

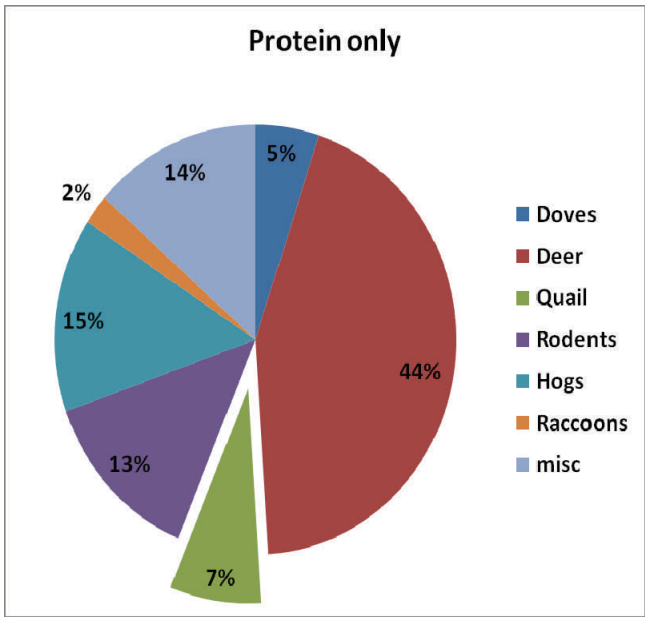
Species visitation at all sites



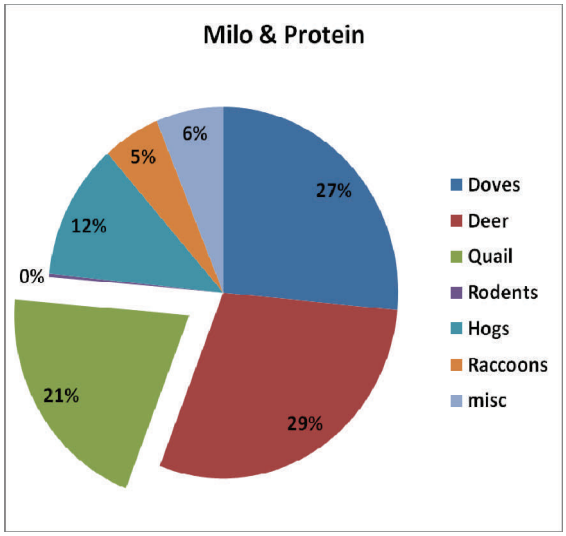
Species visitation—Milo only (excluding songbirds)



Species visitation—Protein only (excluding songbirds)



Species visitation Milo and Protein (excluding songbirds)



STOP 3

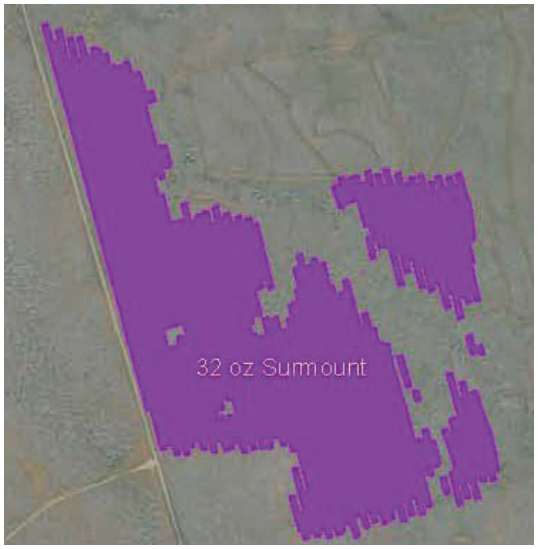
STOP #3: Babe CRP (on east side of fence) ; was burned 19 January 2010; fuel load estimated at 6,000 lbs/ac. Meg Pasture; was burned on 13 Mar 2010, then sprayed with 32 oz/ac of Surmount herbicide in late April 2010. Note lack of forbs.

Evaluating Impacts of Cacti Management on Quail Habitability and Huntability

Dale Rollins, RPQRR

Dense stands of prickly pear are problematic on some portions of RPQRR; they impede hunting dogs and, via interactions with Texas wintergrass, limit forb availability. Hence, we initiated aggressive efforts towards controlling prickly pear in 2009 via prescribed burning (summer and winter burns, patch-burn grazing, and herbicides (with/without burning). We know how to kill prickly pear (e.g., application of picloram herbicide after a winter burn will kill >90% of cacti), but such treatments are not without collateral damage (e.g., "forb shock", kills hackberry trees). The Meg Pasture was (overall) our most densely-infested pasture, so we subjected it to a burn (mid-March, 2010) then followed up with an application of Surmount herbicide (32-oz rate applied via helicopter [7.5 gallons/ac of spray mixture]; at a cost of $32/ac). The riparian area (where the bulk of our hackberry trees were) was spared from spraying. Over the next several years, we will be evaluating (a) forb response, (b) arthropod response, and (c) "huntability" by pointing dogs using GPS-collars. We will also be evaluating methods to "jump start" forb abundance following herbicide application, including winter discing, glyphosate-pretreatment plus seasonal burning.

Funding provided by RPQRR.



STOP 4

STOP #4: Ellie Pasture – Patch Burn Grazed

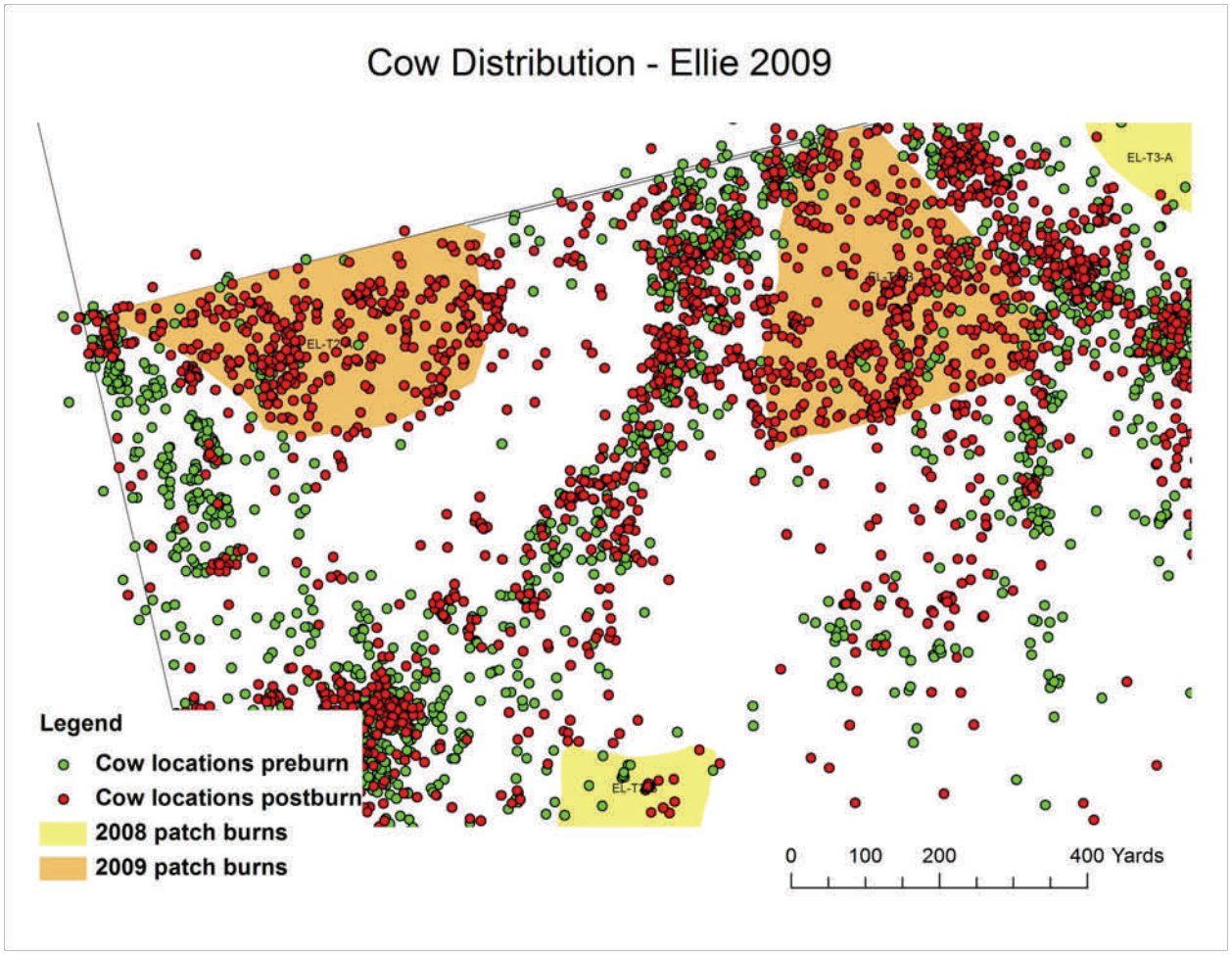
"A" (on east side of road as we go through gate) – burned March 2009
"B" (on west side about ½ mile down road) – burned Mar 2008
"C" (on north side of road just prior to departing pasture – burned Mar 2008

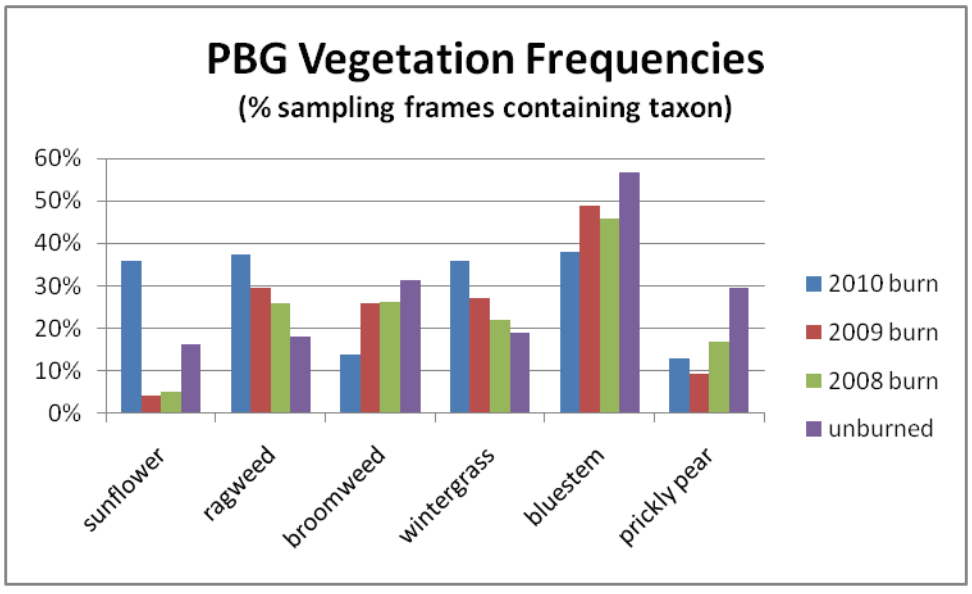
Patch-Burn Grazing Research at RPQRR

Kurt Huffman, Texas A&M University
Dale Rollins and Dave Barre, RPQRR

Patch-burn grazing (PBG) is the application of prescribed fire and grazing to achieve specific habitat management goals. In applying PBG, managers select specific areas, or patches, within a pasture to burn. Cattle within the pasture are allowed to graze freely among burned and unburned patches. Cattle are attracted to freshly burned prickly pear and palatable and nutritious new growth that appears shortly after burning, and therefore tend to focus their grazing activity on recently burned patches. The result of selective burning and grazing is a diversity, or heterogeneity, of plant species composition and structure at the pasture scale. Based on patch burn grazing research in North American tall-grass prairies, we predict that this vegetative heterogeneity will benefit wildlife species in general, and bobwhite in particular. The objectives of the RPQRR PBG study are to 1) quantify cattle use of patches within the pasture; 2) quantify changes in plant structure and species composition in response to burning and grazing; 3) assess patch burn grazing as a quail-friendly approach to prickly pear control; 4) characterize arthropod population dynamics in response to patch burn grazing; 5) characterize small mammal population dynamics in response to patch burn grazing; and 6) quantify the impact of patch burn grazing on soil (site) stability.

Funding provided by NRCS Conservation Innovation Grant and RPQRR.


Cow Distribution - Ellie 2009
EL-T3-A
Legend
Cow locations preburn
Cow locations postburn
2008 patch burns
2009 patch burns
0
100
200
400 Yards

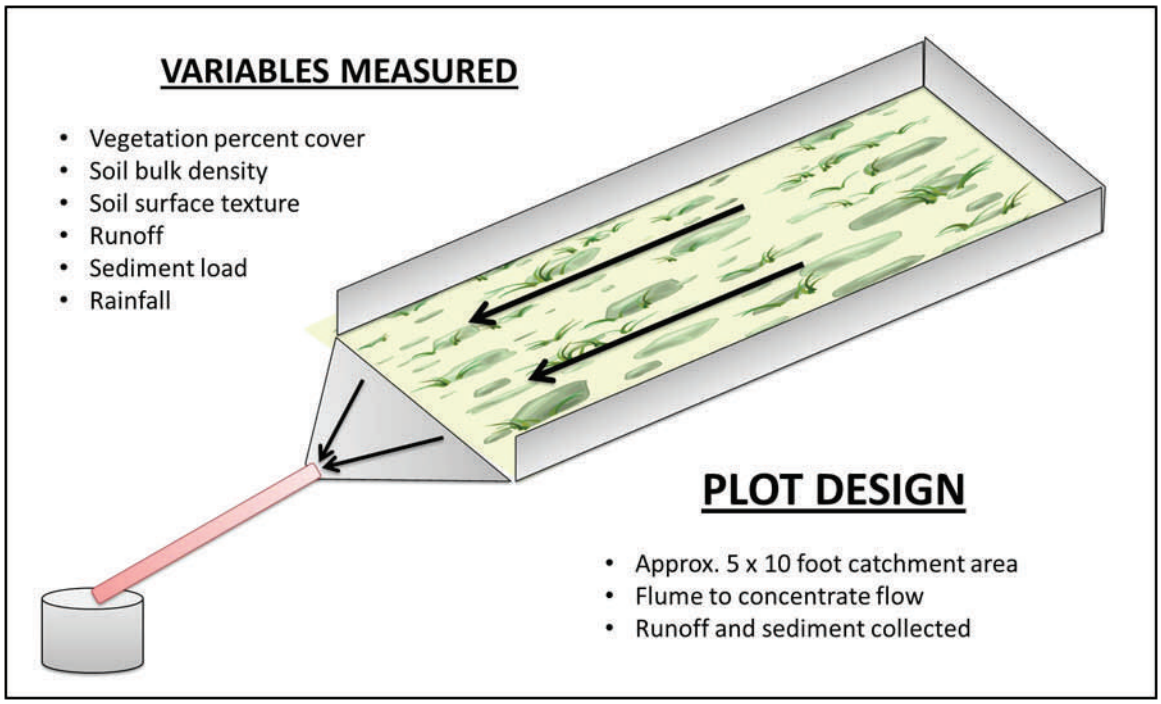

PBG Vegetation Frequencies
(% sampling frames containing taxon)
60%
50%
40%
30%
20%
10%
0%
sunflower
ragweed
broomweed
wintergrass
bluestem
prickly pear
2010 burn
2009 burn
2008 burn
unburned

Site stability in the presence of patch-burn grazing at RPQRR

Dave Barre, RPQRR

Since March 2008 we have been investigating vegetation changes and cattle utilization following patch-burn grazing (PBG). In addition, and to supplement this research, we have initiated a study that will look at the relative site stability following a prescribed burn; measuring run-off and sediment loads from PBG areas, which have been burned on different dates. Plots have been constructed to include a small catchment area (50 ft^2), confined by metal barriers, that drains down-slope through a flume and into a catchment container. We have two patch-burn dates, burned in March 2009 and March 2010, and we plan to add another date in March of 2011. We will compare results from these burned patches to unburned (control) patches for a total of three treatments and one control. Within each treatment we have built two replicate plots on each of two slope angles (<5% and >5%) in order to account for vegetation cover and slope. This gives us a total of four plots per treatment. We intend to measure runoff and sediment loss for each natural rain event for each of the plots. In addition we are measuring soil bulk density, soil texture and percent cover of vegetation for each of the plots. Vegetation within the replicate plots is a close representation of the average vegetation cover of the patch they are in. Rainfall is continuously monitored every five seconds in each of the two pastures of the study. This design is duplicated in two different pastures; Suzie and Ellie.

Funding provided by NRCS Conservation Innovation Grant



Arthropod dynamics on RPQRR

RPQRR staff

Arthropods (e.g., insects) provide critical foods for bobwhites. We do annual surveys in July in order to monitor arthropod abundance at various sites across RPQRR. We use two different methods of collection: pitfalls and sweep nets. Pitfalls were conducted in a series of 6 traps in a line. One line in a treatment and one line in an adjacent control area. The traps were checked every third day for three checks. The sweep nets were conducted perpendicular to one of the six pitfalls in a random direction for a total of 25 sweeps. Results to date suggest that burning stimulates arthropod abundance. In the patch burn grazing study there was consistently more arthropods collected in the burned areas than in the control (non burn) areas. There was always more arthropods collected in the disced areas than in the controls but the strips disced in November showed a substantial increase in numbers. There were more arthropods collected across the board in burned areas compared to controls except in areas that were sprayed with glyphosate—those plots showed larger numbers in the controls.

Funding provided by RPQRR

STOP 5

Lunch

Surveillance of avian influenza virus in wild bobwhite populations at RPQRR

Pamela J. Ferro, Owais Khan, Sanjay M. Reddy and Blanca Lupiani
College of Veterinary Medicine, Texas A&M University
Dale Rollins, Lloyd LaCoste, and Barrett Koennecke, RPQRR

The population of bobwhite quail has decline significantly in 2009 at the Rolling Plains Quail Research Ranch. The objective of our study was to determine prevalence of avian influenza viruses (AIV) in this declining quail population. Cloacal and tracheal swabs were collected from 114 wild-captured bobwhites during December 2009 at RPQRR. Samples were collected using sterile swabs and placed in 2-3 mL viral transport media. For real-time RT-PCR (RRT-PCR), RNA was extracted using a magnetic particle processor and the MagMax™ AI/ND RNA Isolation Kit. RRT-PCR was performed using the AgPath-ID™ AIV-M Reagent Kit, a one-step RRT-PCR for the detection of AIV matrix gene RNA. For virus isolation, 0.2 ml of the swab viral transport media from RRT-PCR positive samples were inoculated via the allantoic sac route into four 9–10 day-old embryonated chicken eggs per sample. Eggs were incubated at 37ºC and amnio-allantoic fluid was collected 5 days post-inoculation and tested for presence of virus by the hemagglutination (HA) test using chicken red blood cells. A total of 5 samples, 4 from cloacal and 1 from tracheal swabs, all from juvenile quails, tested positive for very low levels of AIV by rRT-PCR (Ct values: 33.8-37.4). No virus was isolated from any of the samples tested. Similar findings of low AIV prevalence by RRT-PCR without positive virus isolation have been recently reported in California quail. This is an ongoing project to determine AIV prevalence in wild bobwhite populations at RPQRR.

Funding provided by RPQRR and Texas A&M University.

Age	rRT-PCR		Virus isolation	
	Cloacal	Tracheal	Cloacal	Tracheal
Juvenile	4/71	1/71	0/4	0/1
Adult	0/41	0/41	NT[1]	NT
Undetermined	2	2	NT	NT

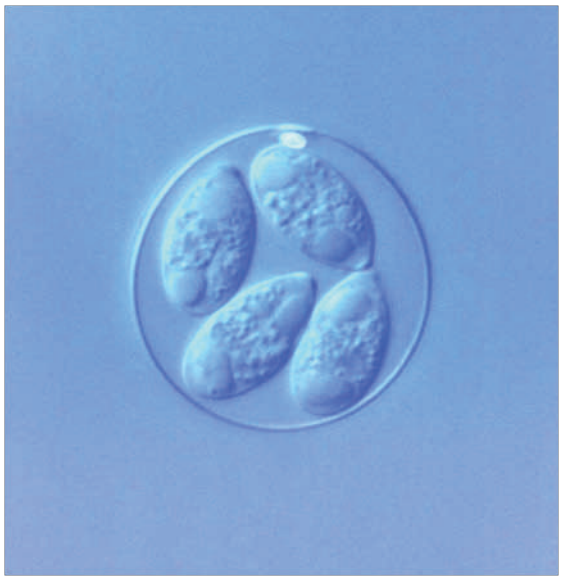
*NT = not tested

Assessment of microparasites in bobwhites from RPQRR

Lacy Parsons and Guan Zhu, College of Veterinary Medicine, Texas A&M University
Lloyd LaCoste, Kurt Huffman, Barrett Koennecke, and Seth Claybaker, RPQRR

The bobwhite quail population has been declining by 3% annually over the past 40 years in Texas. Numerous factors, including disease and parasitism have been proposed as agents in this decline. Currently, our work involves detecting the prevalence of two microparasites, i.e., *Cryptosporidium spp*. and *Eimeria spp*., which are two common protozoa that can cause high mortality and morbidity rates in bobwhite quail. The method of detection for the two protozoa was by PCR, which uses DNA extracted from bobwhite quail droppings collected from trapped individuals. Once the positive clinical samples were determined, several methods were applied to procure clinical samples for sequencing. These methods are transformation, PCR screen, DNA plasmid extraction, and restriction enzyme digestion. First, the PCR products were cloned and inserted into a pCr 2.1-TOPO vector from the TOPO TA cloning kit, which converts them into a plasmid. Then, a PCR screen was conducted to verify the correct clones, which were chosen for DNA plasmid extraction. Finally, plasmids were digested using the *Eco*RI-HF restriction enzyme and detected for the correct size of clones and sequenced. The results showed clinical samples positive for *Cryptosporidium spp.* and *Eimeria spp*., determined the infection rate, and areas prone to infection. In conclusion, we established a stable method to detect and determine if the cause for the population decline in bobwhite quail at Rolling Plains Quail Research Ranch is due to *Cryptosporidium spp.* and/or *Eimeria spp.*

Funding provided by Texas A&M University and RPQRR.



Eimeria tenella

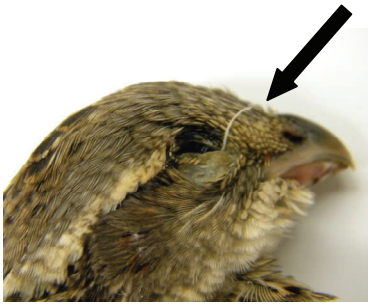
Cryptosporidium parvum

Two Year Survey of *Oxyspirura petrowi* in Northern Bobwhites from the Rolling Plains of Texas

Stacie M. Villarreal, Alan M. Fedynich, Leonard A. Brennan, CKWRI
Dale Rollins, RPQRR

Oxyspirura petrowi (eyeworms) is an indirect lifecycle nematode that occurs under the nictitating membrane on the eye surface of certain bird species. Previous studies from western or northwestern regions of Texas have found *O. petrowi* in bobwhites (*Colinus virginianus*), scaled quail (*Callipepla squamata*), and Montezuma quail (*Cyrtonyx montezumae*). The purpose of this study was to learn more about the occurrence of *O. petrowi* in bobwhites from the Rolling Plains of Texas. We examined 78 bobwhites from the Rolling Plains Quail Research Ranch (30 from the 2007–2008 hunting season and 48 from the 2009–2010 hunting season). Overall, 63% of bobwhites were infected with 284 *O. petrowi*. Twenty (67%) bobwhites from the 2007–2008 season were infected, whereas, 29 (60%) bobwhites from the 2009–2010 season were infected. Mean intensity of *O. petrowi* from the 2007– 2008 season was 4.9 $\pm$ 8.7 (SD) (range: 1–40; median: 2) and mean abundance was 7.9 $\pm$ 9.9 (SD) (median: 4.5). From the 2009– 2010 season, the mean intensity of *O. petrowi* was 2.6 $\pm$ 3.2 (SD) (range: 1–13; median: 2) and mean abundance was 4.3 $\pm$ 3.1 (SD) (median: 4). Findings from these studies provide insight regarding the prevalence and abundance of *O. petrowi* in bobwhites from the Rolling Plains of Texas. Further studies are needed to survey bobwhites from a larger area of the Rolling Plains of Texas to learn more about the distribution of *O. petrowi* in the region.

Funding provided by RPQRR and Caesar Kleberg Wildlife Research Institute.



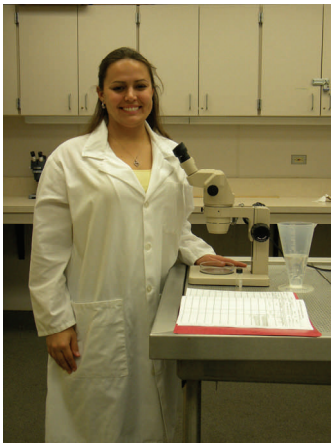
Posterior end of a male
Oxyspirura petrowi

Assessment of Helminths in Northern Bobwhites from the Rolling Plains of Texas

Stacie M. Villarreal, Alan M. Fedynich, and Leonard A. Brennan, CKWRI
Dale Rollins, RPQRR

The objectives of this study are (a) to assess the prevalence, intensity, and abundance of helminth parasites in northern bobwhites from the Rolling Plains Ecoregion during an annual cycle and (b) determine whether infections are related to season (spring, summer, winter), age (juvenile, adult), and sex (male, female) of the host. During January–March 2010, 20 adults and 18 juveniles were collected, necropsied, and examined for helminth parasites. Preliminary findings from this sample indicated 100% of the bobwhites were infected with cecal nematodes and 80% were infected with eyeworms; other nematodes and cestodes have yet to be found, which will be identified and counted. During July–August 2010, we collected 22 adults and 29 juveniles (6-–10 wks of age). These birds will be necropsied and examined for helminths shortly. Findings from this study will provide a better understanding about helminths and bobwhites in relation to their breeding cycle including which age and sex group is infected more—factors that could have implications for future breeding pairs and hatchlings.

Funding provided by RPQRR and Caesar Kleberg Wildlife Research Institute.



Assessing Seasonal Diets of Coyotes at RPQRR

Lloyd a. LaCoste, RPQRR

Whenever the topic of quail management comes up, a discussion of predator control is almost certain to ensue. Should the conscientious quail manager control every predator that could potentially eat a quail or depredate a nest, if it is legal to do so? Should certain predators be controlled while others are left alone? For example, what effect do coyotes have on bobwhite populations? There are plenty of coyotes at RPQRR, so we decided to investigate. Are they eating quail or are they eating rats? Once a month, we collect 30 scats (i.e., droppings) from around the ranch. Scats have been collected fror the past 22 months, and will continue to be collected for another 18 moths in order to determine how diet varies over time. RPQRR will be working in conjunction with a graduate student from Texas Tech University to analyze the contents of the scat. Of course, it will be interesting to find out how often coyotes are eating bobwhite quail or their eggs. However, it will also be interesting to discover what else they are eating. Are they eating smaller "mesocarnivores (i.e., skunks)? If so, they may be doing the quail a favor by reducing the number of nest predators. Are they eating large numbers of rodents? If so, they may be reducing the numbers of animals that compete with quail for seeds. Does their diet change on a seasonal or annual basis? These are the sorts of questions we hope to answer by analyzing coyote scat.

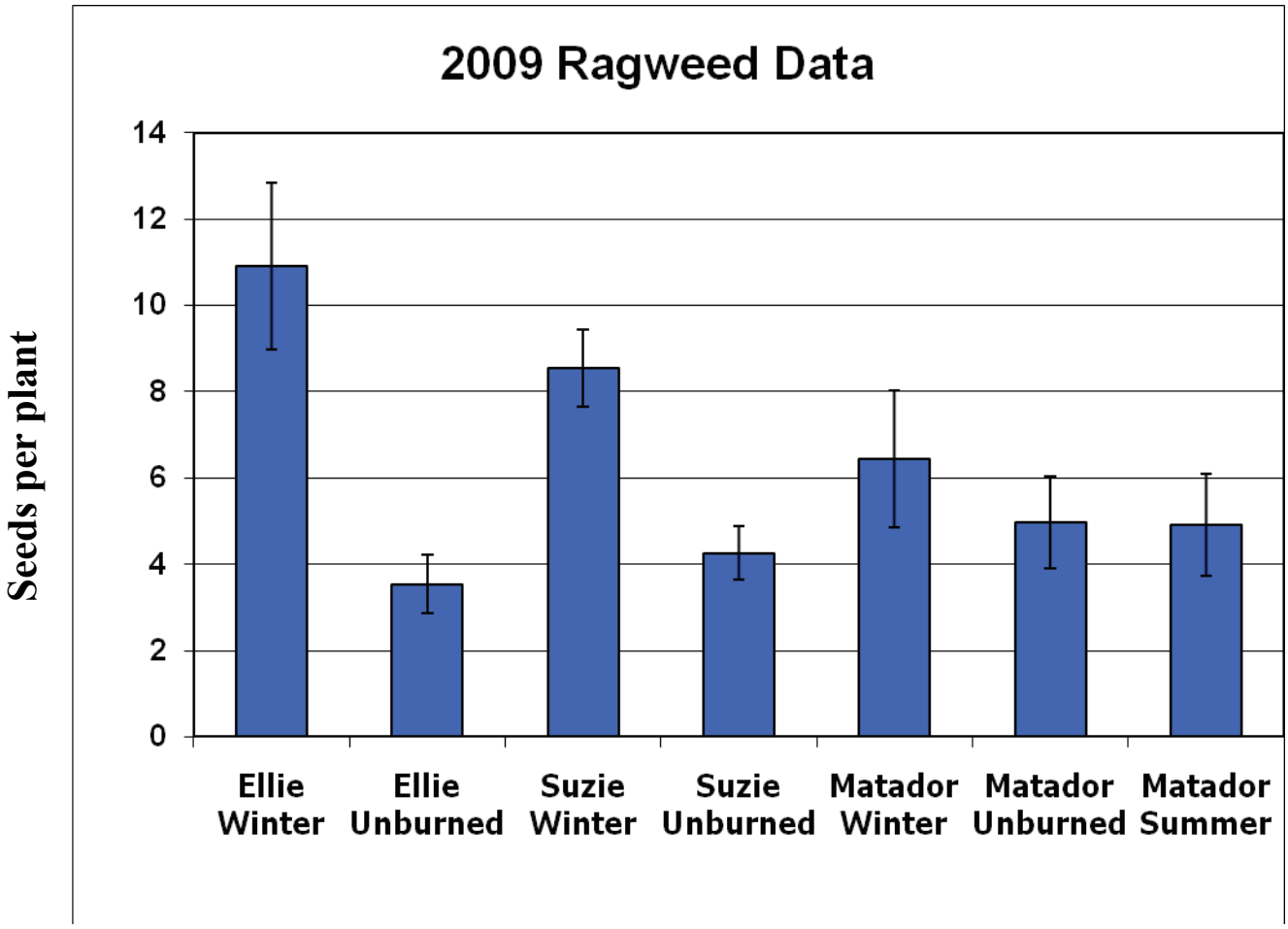
Funding provided by RPQRR.

Seed dynamics of western ragweed on various sites

Cathy LaCoste and Dave Barre, RPQRR

The seeds of Western Ragweed (*Ambrosia cumanensis*) are a major component of the winter diet of bobwhites in the Rolling Plains. Over the coming years on the Rolling Plains Quail Research Ranch we seek to measure the production and "reliability" of such ragweed seed crops. We intend to measure seed yield from various habitats on the Ranch, and whether burning (both cool- and warm- season burns) stimulates seed production of ragweed, as it does for some other species. In late November 2009 we sampled ragweed plants from 50-acre plots within 2 rangeland pastures that were burned in March 2009 (cool-season burns). Plants were also sampled from adjacent unburned areas, with which to compare to characteristics of those plants sampled from within the burned areas. Plant mass, plant height and the number of seeds were measured for each plant. Plant mass did not differ significantly between burned (7.1-7.3 grams) and unburned (6.7-6.9 grams) rangeland areas. Seed counts were 2-3X greater on plants from burned areas (8.5-10.9 seeds/plant) than plants from unburned areas (3.5-4.3 seeds/plant). Additional samples were obtained from Matador WMA in Cottle County; these data confirmed a trend observed at RPQRR that indicates cool-season burns dstimuate see dproductionin western ragweed relative to non-burned or summer-burned sites.

Funding provided by RPQRR.

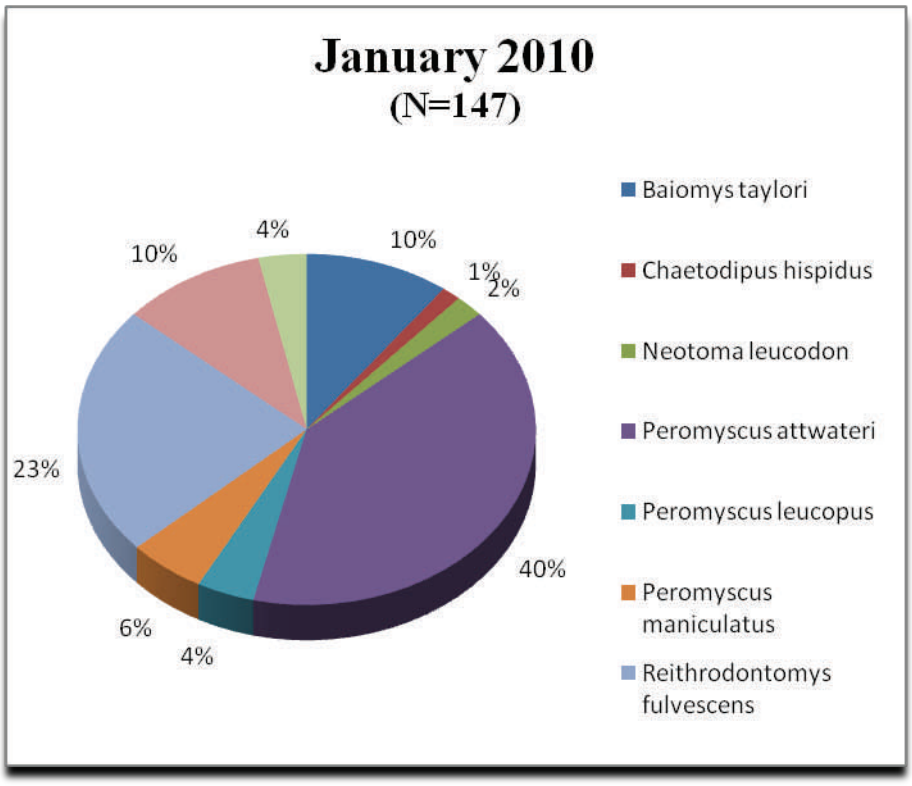


Small mammal abundance at RPQRR

Barrett Koennecke, RPQRR

Small mammals (e.g., rodents) likely serve as a "buffer species" for bobwhites if they deflect/ absorb predation by carnivores (e.g., coyotes, bobcats). The objective of this effort is to collect baseline data on the diversity and population size of rodents across the ranch. Over time, we will determine correlations between boom/bust population years and between rodents and other species of fauna across the ranch. We trap for rodents in 7 different habitat types across the ranch: Riparian, CRP fields, Prickly Pear, Rocky Ridges, Old Cropland, Mesquite Woodland, and Sandy Soil. We use 25 Sherman Traps in a 5x5 grid, with 5 grids per habitat type for a total of 4 nights; this equates to 500 trap nights/habitat type, and a total of 3,500 trap nights per trapping season. Trapping is conducted in January and July. Over 5 trapping sessions we have observed 14 different species of rodents. The Northern Pygmy mouse (*Baiomys taylori*), and the Hispid Cotton Rat (*Sigmodon hispidus*), have consistently been the most abundant species on the ranch to this point.

Funding Provided by RPQRR

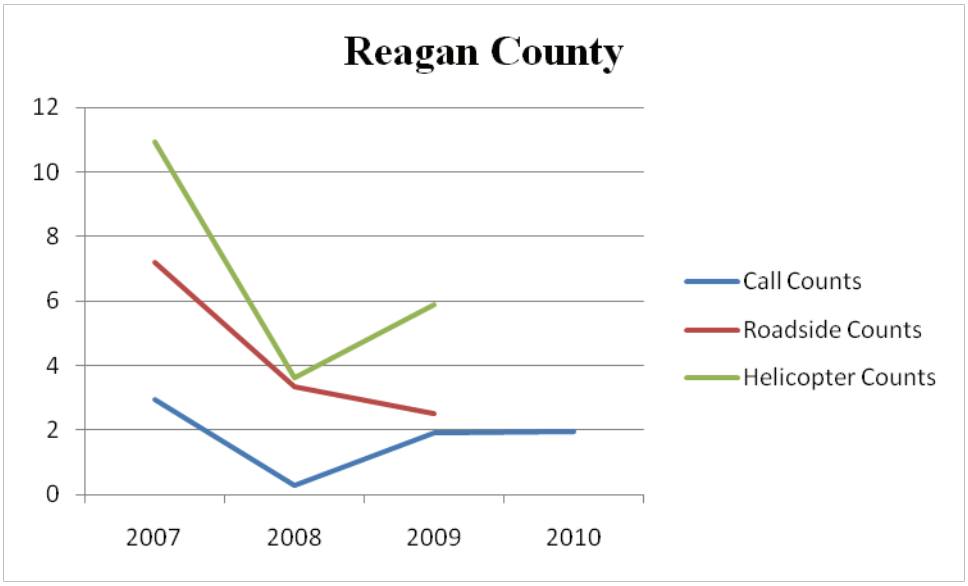


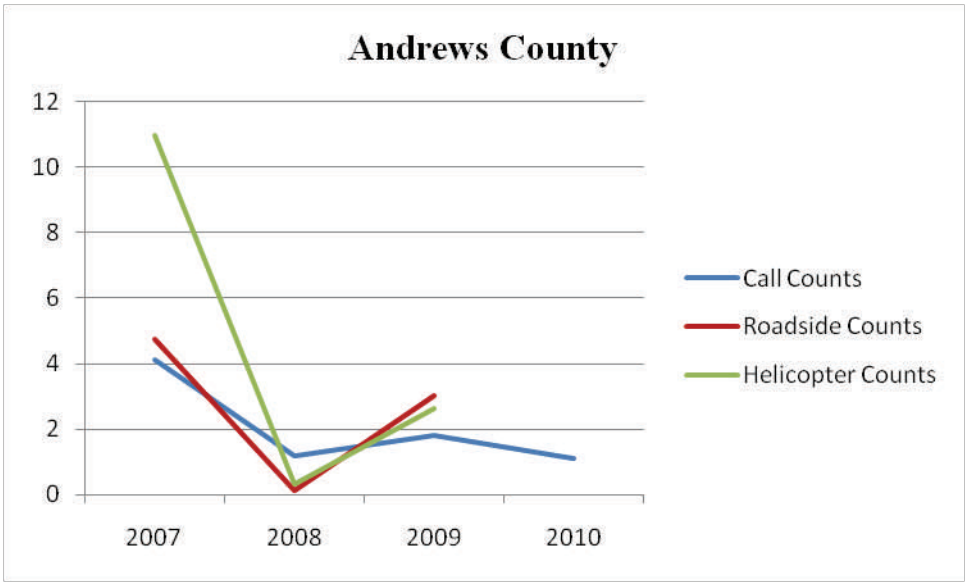
Assessing annual abundance of scaled quail in west Texas

Barrett Koennecke and Dale Rollins, RPQRR
Jeff White, University Lands-West Texas Operations

Various counting methods are being evaluated for their ability to accurately estimate fall abundance for scaled quail. Study sites include 6 sites in Andrews, Midland, Rankin, and Upton counties (only sites in Andrews and Reagan counties are shown here). Methods include roadside counts, dummy nest surveys, and spring call counts as well as novel techniques like helicopter flush counts. Spring and summer 2007 had considerable rainfall when compared to spring/summer of 2008 and you can clearly see how the populations plummeted. Even though weather conditions seemed good this spring, quail numbers (as gauged by ouir estimates) failed to rebound. These counts are ongoing.

Funding provided by University Lands-West Texas Operations and RPQRR.





The Eastern Range Initiative: involving the private landowner in bobwhite management

Dean Ransom, Jr., Research Scientist, RPQRR

The Eastern Range Initiative (ERI) was initiated in 2009 with the goal of recruiting interested landowners and land managers to become involved in research and management of northern bobwhites on their property. The target audience was land managers in the eastern portion of the Rolling Plains and western Cross Timbers (i.e., along a corridor from the Waco area northeast to the Wichita Falls area), which represents the current east range limit of extant viable bobwhite populations in Texas. Further, we sought land holdings that once had strong bobwhite populations, but no longer do. This would allow us the opportunity to apply management practices with the goal of recovering existing but depressed populations. The approach we use is to gather baseline data on bobwhite abundance in the first year of involvement after which appropriate 'best management practices' would be implemented along with continued monitoring to evaluate the bobwhite response. To date, we have four active research partners involved in the ERI and the first year of baseline data collection is nearly finished. We continue to seek additional partners in this effort. Anyone interested should contact Drs. Dale Rollins or Dean Ransom, Jr.

Funding provided by RPQRR

Evaluating the use of Surrogators for raising Northern Bobwhites

Dean Ransom, Jr., Research Scientist, RPQRR

The Surrogator is a technique for raising 1-day old bobwhite chicks to 5 weeks of age in a protective enclosed brooder box containing food, water, and a heat source. Bobwhite chicks are placed in the Surrogator at 1-day of age and released as a group at 5 weeks of age. The manufacturer claims as high degree of satisfaction among its customers, and provides substantial personal testimony as to its effectiveness. However, recent research in Georgia and Kentucky evaluating the success of these units in establishing bobwhite populations has provided data indicating that post-release survival is poor, and the return of banded surrogated quail to the hunter's bag was also poor; similar results have been reported from Nebraska for pheasants. In 2009, RPQRR began a study to determine post-release survival of Surrogated bobwhites at two sites in Texas (Palo Pinto County and Clay County). We radio-tagged and leg banded approximately 80 5-week old chicks at the Palo Pinto site and approximately 40 chicks at the Clay County site. Most of the tagged birds were dead or lost by the second week post release. In 2010, we tagged 27 birds at a third site in Palo Pinto County, and found similar results, that being extremely high mortality of tagged birds within 2 weeks post-release. Visual observations of bobwhites without transmitters suggest that similar mortality was occurring. Based on our results to date, landowners utilizing Surrogators to enhance the existing bobwhite population or re-establishing populations in unoccupied ranges should expect poor survival and low success in achieving their goals.

Funding provided by RPQRR.

Estimates of bobwhite abundance on RPQRR

Lloyd LaCoste, RPQRR

Since RPQRR was started in 2007, we have implemented various ways to monitor quail abundance over time; these efforts include helicopter surveys, whistle counts (spring and fall), mark-recapture (using leg-banded birds), radio telemetry, dummy nest survival, and fall roadside counts. We seek to determine which, if any, of these provide(s) reliable estimates relative to the time and expense of conducting the counts.

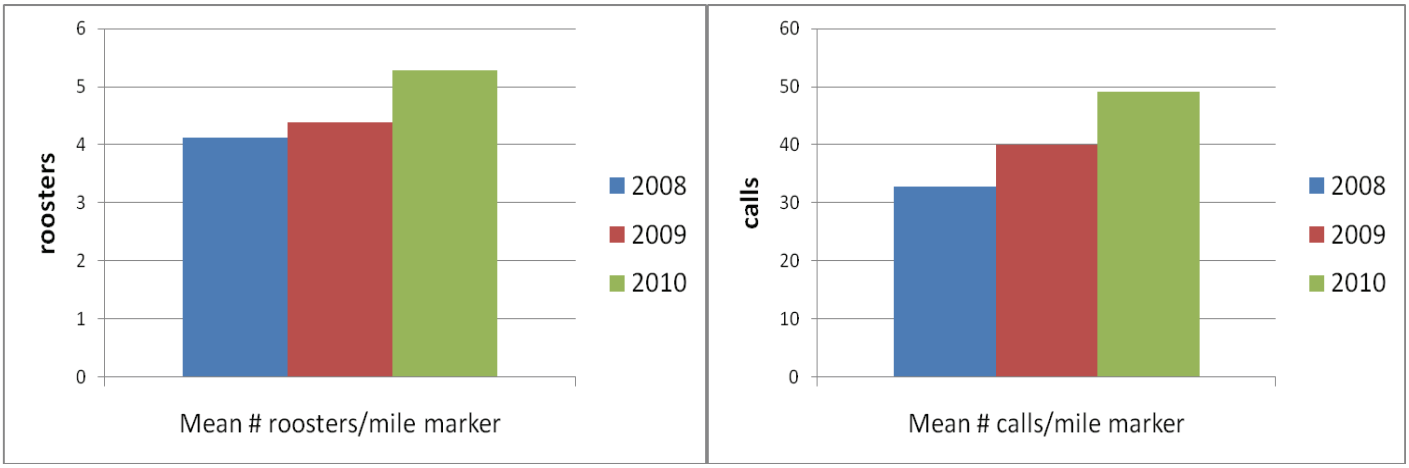
Roadside counts are easy to conduct—you simply drive a prescribed route during early-morning or late-afternoon hours and count the number of quail observed. We repeat our counts six times during September; three during morning hours and three during afternoon hours. The number of birds observed per mile is an index to quail abundance.

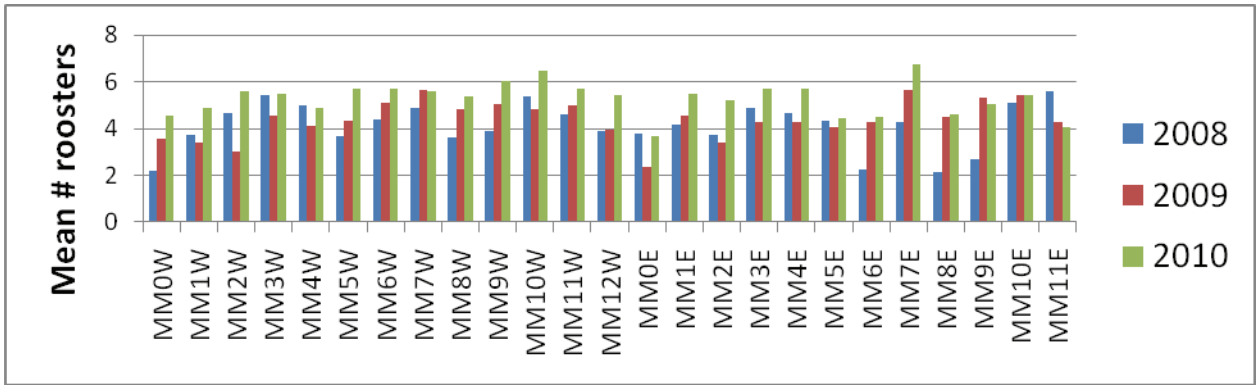
Each year during August, Texas Parks and Wildlife Department biologists conduct roadside counts on 20-mile routes across much of west and south Texas. At RPQRR, we count along two 10-mile routes, i.e., an "east" and "west" line to give us greater resolution. Our habitat is quite different from one side of the ranch to the other, with the western half having considerably less brush (i.e., "quail houses") than the eastern part of the ranch. We observed an average of 96.0 birds per 20-mile route in 2008, but only 25.2 birds per route in 2009. The table below compares TPWD'S mean number of quail per 20 mile route to RPQRR's; TPWD's figures for 2010 are pending and RPQRR's are based on only three counts at this point.

Funding provided by RPQRR

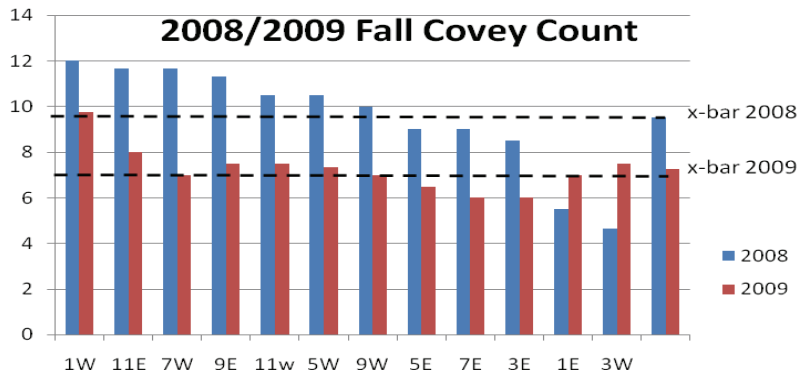
Mean Number of Birds Observed per 20-mile Route		
Year	**TPWD**	**RPQRR**
2008	18.7	96
2009	6.6	25.2
2010	Not yet available	29

Call counts can be used to index abundance of quail over time. Spring call counts are conducted at 25 call count stations or "mile markers" that are spread out across the ranch. The ranch is divided into 2 transects: a West line which has 13 mile markers, and an East line with 12 mile markers. Call counts were conducted twice weekly starting on May 18, 2010 and continued until July 28, 2010. Counts averaged 5.3 roosters and 49.2 calls per stop for 2010. This is up from 2009 (4.4 roosters/ stop and 39.9 calls per stop).





Covey call counts were also conducted during the fall months (Oct –Dec) as an index to relative abundance. Every odd-numbered mile marker was sampled. Covey call counts divided by ten is a crude index to quail density, for example: the average fall covey count was 7.3 coveys – this would equate to about 0.7 quail per acre. We will start 2010 counts in October.

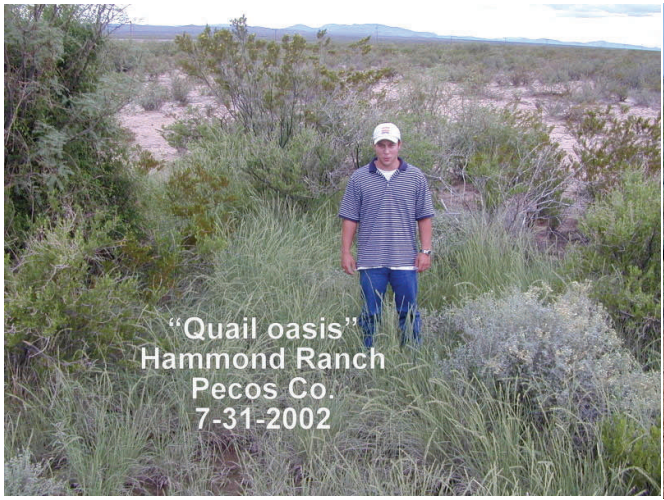


Spreader Dams as Quail Oases

Dale Rollins, RPQRR

The recipe for quail habitat in west Texas is really pretty simple: just add water! However, much of our rainfall come sin torrents and is lost as runoff, carrying our valuable soil resource along with it. Spreader dams have been used to slow runoff and protect ranch roads from gully erosion. They can also be used to enhance quail habitat by providing focal points where plant structure, microclimate, and biomass (floral and arthropod) can be enhanced. Previous studies in Pecos Co., Tx, found that "quail oases" produced 25 times more plant biomass and 5 times more arthropod biomass than immediately adjacent uplands. Recently we began implementing spreader dams on RPQRR. We seeded the pits immediately after construction by hand-broadcasting various cool-season species (wheat, winterpeas, alfalfa) and a perennial legume (Illinois and 'Beewild' bundleflowers).

Funding provided by RPQRR.



STOP 6

STOP #6: Brush Spray treatments; each strip is about 135 feet wide separated by a 45 foot “check”.

“A” (Grazon Next @ 2.6 pts/ac)
“B” (Grazon Next @ 2.0 pts/ac)
“C” (Tordon 22K @ 1.0 pt/ac)
“D” (Surmount @ 2.0 pts/ac)
“E” (Tordon 22K @ 2.0 pts/ac)
“F” (Surmount @ 4.0 pts/ac)
“G” (Chaparral + 2,4-D)
“H” (Chapparal @ 3.3 oz/ac)

Collateral damage to various species of woody plant in response to burning and aerial application of various herbicides for prickly pear control

Dave Barre and Dale Rollins, RPQRR

Dense stands of prickly pear occupy several pastures on RPQRR. At the end of April 2010 we applied various herbicides for cacti control using a helicopter. Our objective was to determine the "collateral damage" to desirable woody shrubs (e.g., hackberry). A total of 500 acres were sprayed in three different pastures, with eight strips (four herbicides at different strengths and mixes) in each pasture and crossing areas of prescribed burning to see any combined effects. These strip plots are being evaluated for cacti, forb, shrub, grass, and arthropod dynamics at various time intervals post-treatment. Control (untreated) areas are situated around the perimeter of the strips treated. Brush species were tagged with ID numbers and GPS points for future location and subsequent monitoring. Prickly pear density is being monitored and compared by transects running length-wise through the spray strips. It will be some time (a year after treatment) before a percentage kill can be estimated. Forb species densities have been analyzed this summer and presented in this report.

Funding provided by Dow AgroSciences and RPQRR.

Eight Treatments

Tordon 2pts/acre
Tordon 1 pt/acre
Surmount 4pts/acre
Surmount 2pts/acre
Grazon 2 pts/acre
Grazon 2.6 pts/acre
Chaparral 3.3 oz/acre
Chaparral 3.3 oz/acre + 2,4,D Ester 1 lb/acre

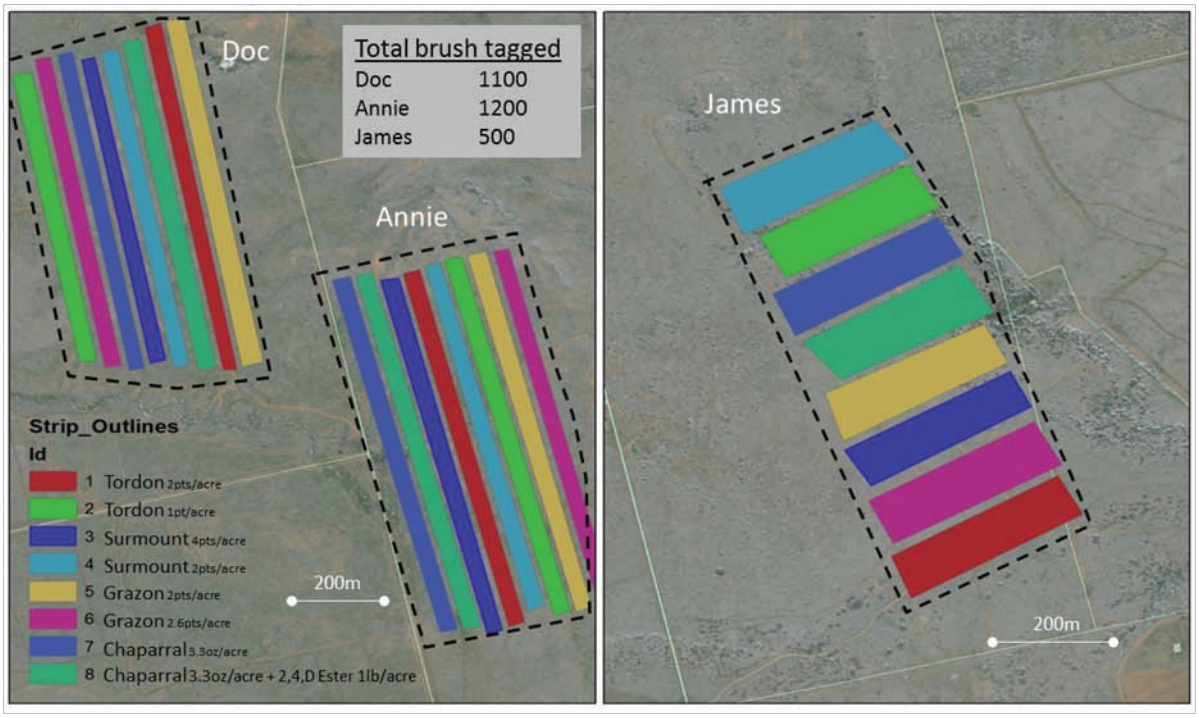
Number of Each Brush Species Tagged

Hackberry	310
Wolfberry	310
Lotebush	345
Catclaw Acacia	380
Catclaw Mimosa	290
Littleleaf Sumac	110
Algerita	220
Ephedra	275
Tasajilla	330

Other Species Tagged

Shin Oak
Skunk Bush
Bumelia
Elbow Bush
Prickly Ash
Live Oak

Schematic showing the eight treatment strips in each pasture. The southern half of the areas in Doc and Annie are burned and the western half of the James treatment area is burned.

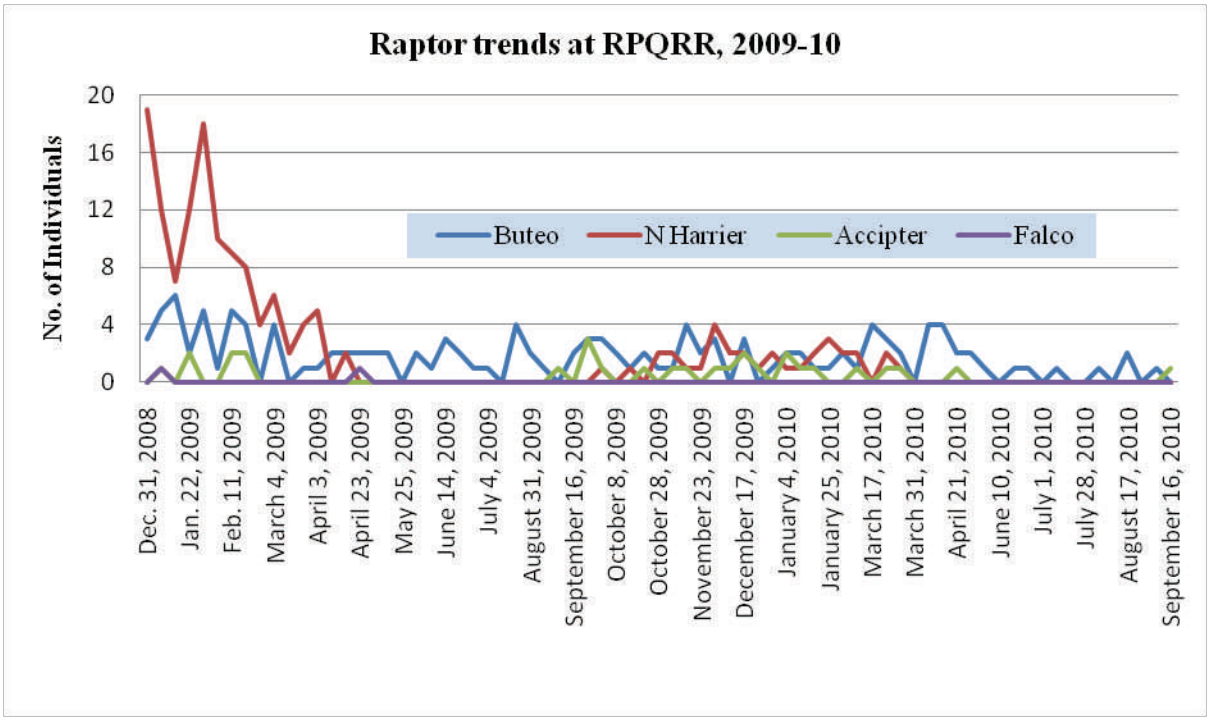


Monitoring seasonal abundance of raptors at RPQRR

Barrett Koennecke, RPQRR

Raptors can be an important predator of quail. We conduct weekly surveys along two, 10-mile routes on the RPQRR and record each raptor's location, species, and what they are doing (e.g., perching, soaring). As expected the number of raptors was greater in the winter months than the summer. Red-tailed hawks are detected year-round in low numbers. Northern harriers are the most abundant species observed, and their numbers peak during winter. We believe there are more accipiters on the RPQRR but because of their "sit and watch" style of hunting nature, they are more difficult to detect. Overall raptor abundance was much lower during 2010, indicating about an 80% reduction, especially in northern harriers.

Funding provided by RPQRR.

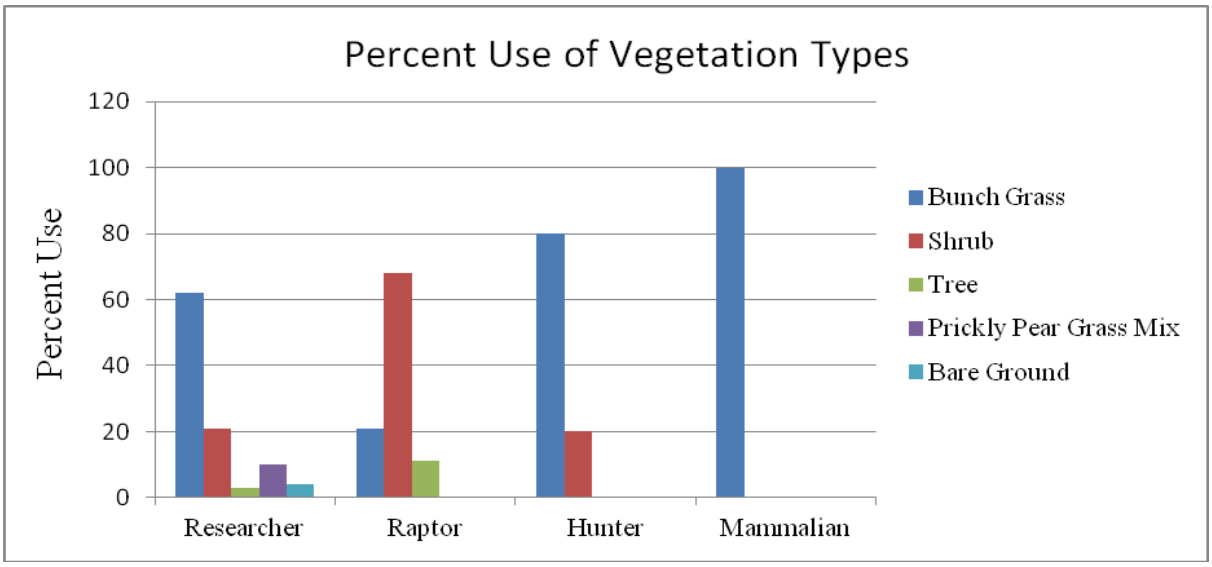


Threat Avoidance by Northern Bobwhite in the Texas Rolling Plains

Rebecca Perkins and Clint Boal, Texas Tech University
Dale Rollins, RPQRR

As a heavily hunted species and with declining populations throughout Texas, northern bobwhites (*Colinus virginianus*) have become a species of great management interest. Land management strategies for bobwhites recommend planting various vegetative species to provide cover. However, there is a general lack of research information as to how the birds use the cover in relation to specific predation threats. We began preliminary data collection in January of 2010 to investigate the differences in habitat use and escape behavior of northern bobwhites exposed to four different predation threats; researcher, raptor, mammalian, and hunter. To monitor habitat use and escape behavior we are recording distance to flush, flush speed, over-all flight speed, flight distance, and cover use in flushing events. Our preliminary data are sample size limited, but bobwhites have shown a strong preference for shrubs over grasses as cover when threatened by a raptor. Further flush data collection will resume in the fall of 2010 and extend into the winter of 2011.

Funding provided by RPQRR and Cooperative Fish & Wildlife Research Unit, & Texas Tech University



STOP 7

STOP #7: Doc Pasture strip discing as we progress through these, notice how forbs, especially sunflowers, have responded to differing dates of discing.

Seasonal discing to enhance forb abundance

Lloyd LaCoste, RPQRR

Discing is a management technique that can be used to disturb the soil and set back plant succession. When you disc an area you help promote forbs. Forb seeds are very beneficial to quail, and arthropods seem to prefer forbs. Arthropods are an important food source for quail. Anything that benefits arthropods also benefits quail. At RPQRR we have been discing three different soil types every other month starting in November for 2 years. This year November had the greatest forb response followed by January—annual sunflowers were especally responsive to these dates. The November disc strips produced the most arthropods. The forb response may be a function of the timing and/or amount of rainfall as last year the response was not as impressive.

Funding provided by RPQRR.

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